MATERIAL SAFETY DATA SHEET

SRM Supplier: National Institute of Standards and Technology
Standard Reference Materials Program
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Gaithersburg, Maryland 20899

SRM Number: 2203
MSDS Number: 2203
SRM Name: Potassium Fluoride
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SECTION I. MATERIAL IDENTIFICATION

Material Name: Potassium Fluoride (Standard for Ion-Selective Electrodes)

Description: White crystals or powder

Other Designations: Potassium Fluoride Crystal

Chemical Formula: KF

CAS Registration: 7789-23-3

DOT Classification: Not regulated by DOT

Manufacturer/ Supplier: Available from a number of suppliers

SECTION II. HAZARDOUS INGREDIENTS

Hazardous Components	Nominal Concentration (%)	Limits and Toxicity Data
Potassium Fluoride Crystal	~100 %	ACGIH TLV-TWA: 2.5 mg/m^3
		OSHA TLV-TWA: 2.5 mg/m^3
		NIOSH Recommended TWA (10 h): 2.5 mg/m^3
		Rat, Oral: LD_{50}: 245 mg/kg

SECTION III. PHYSICAL/ CHEMICAL CHARACTERISTICS

Potassium Fluoride
Appearance and Odor: White crystals or powder with no odor
Molecular Weight: 58.10
Boiling Point: 1505 °C
Melting Point: 860 °C
Specific Gravity: 2.48 solid (H_2O = 1)
Solubility in Water: 92.3 % (18 °C)

SECTION IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point: Not Applicable **Method Used:** Not Applicable **Autoignition Temperature:** Not Applicable

Flammability Limits in Air (Volume %): UPPER: Not Applicable
LOWER: Not Applicable

Unusual Fire and Explosion Hazards: This material is a negligible fire hazard. Note health hazards from mist.

Extinguishing Media: Use regular dry chemical, carbon dioxide, regular foam, or water.

Special Fire Procedures: Fire fighters should wear self-contained breathing apparatus (SCBA) with a full facepiece in the pressure-demand or positive-mode and other protective clothing. Wear goggles if eye protection is not provided. Use water to keep containers cool.

SECTION V. REACTIVITY DATA

Stability: **X** **Stable** ____ **Unstable**

Conditions to Avoid: Avoid heat, flames, and sources of ignition.

Incompatibility (Materials to Avoid): This material is incompatible with strong acids, halogens, and metals.

Hazardous Decomposition or Byproducts: Thermal decomposition may result in oxides of potassium.

Hazardous Polymerization: _____ **Will Occur** **X** **Will Not Occur**

SECTION VI. HEALTH HAZARD DATA

Route of Entry: **X** **Inhalation** **X** **Skin** **X** **Ingestion**

Health Hazards (Acute and Chronic): The main hazard associated with this material is its slight acidity which can result in irritation at contact points. Inhalation of dust or mist can be irritating.

Signs and Symptoms of Exposure: Inhalation of dust or mist may produce these symptoms: chills, labored breathing, fevers and unproductive cough. The fluoride may cause hypocalcemia. Inflammation and necrosis of the mucous membranes may occur. Chronic ingestion may cause osseous fluorisis and damage kidneys. Other symptoms related to ingestion may be salivation, nausea, vomiting, diarrhea, and abdominal pain. Potassium ion may cause lowered blood pressure; coma and death may result. The fluoride ion can reduce serum calcium levels, possibly causing fatal hypocalcemia. Contact with skin or eyes may produce strong irritation.

Medical Conditions Generally Aggravated by Exposure: Not Applicable

Listed as a Carcinogen/Potential Carcinogen:

	Yes	No
In the National Toxicology Program (NTP) Report on Carcinogens		X
In the International Agency for Research on Cancer (IARC) Monographs		X
By the Occupational Safety and Health Administration (OSHA)		X

EMERGENCY AND FIRST AID PROCEDURES:

Skin Contact: Remove contaminated shoes and clothing. Rinse affected area with large amounts of water followed by washing the area with soap and water. Obtain medical assistance if necessary.

Eye Contact: Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Obtain medical assistance.

Inhalation: If inhaled, remove the victim to fresh air. If breathing is difficult, give oxygen, provided a qualified operator is available. If victim is not breathing, give artificial respiration. Obtain medical assistance immediately. Give supportive treatment for chills or fever.

Ingestion: If ingested, give soluble calcium in any form: milk, calcium gluconate solution, or calcium lactate solution in 10 g to 250 mL water concentration. Obtain medical assistance immediately.

TARGET ORGAN(S) OF ATTACK: Skin, bones, and kidneys.

SECTION VII. PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken in Case Material Is Released or Spilled: Notify safety personnel of major spills and/or leaks. Sweep up spills, avoid dust promoting conditions, and place material in an appropriate container for disposal. Water may be used to complete cleaning.

Waste Disposal: Dispose of waste in an approved landfill or incinerate. Follow all federal, state, and local regulations.

Handling and Storage: Handle as material of moderate oral toxicity. No smoking or eating while handling. Material should be stored away from water to prevent metal corrosion and increased irritation to skin or eyes; also store away from acids and alkalis. Protect from physical damage. Store at moderate temperatures in well-ventilated areas. Provide local exhaust ventilation in sufficient volume and pattern to keep concentration of hazardous ingredients below the minimal exposure at which irritation may occur. Natural ventilation is adequate in the absence of fumes, mist, or dust. Chemical safety goggles should be worn to protect eyes from contact with dust, mist, or solution. Protective rubber gloves and protective clothing should be worn if there is prolonged or repeated contact with solid or any contact with solution. Eyewash stations and washing facilities should be readily available in areas of use and handling.

NOTE: Contact lenses pose a special problem; soft lenses may absorb irritants and all lenses concentrate them. **DO NOT** wear contact lenses in the lab.

Store this material in tightly closed containers in a cool, dry, well-ventilated area away from oxidizing agents.

SECTION VIII. SOURCE DATA/ OTHER COMMENTS

Sources:
Allied Chemical, Product Safety Data Sheet Potassium Fluoride Crystal, May 1982.
MDL Information Systems, MSDS *Potassium Fluoride*, March 16, 1999.
The Merck Index, 11 ed., 1989.
CRC Handbook of Chemistry and Physics, 71st ed., 1990-1991.